Evaluation of Two Nonradiolabeled Murine Local Lymph Node Assays (LLNA) for Potency Categorization of Substances Causing Allergic Contact Dermatitis in Humans

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The correct classification of strong skin sensitizers is critical because such substances are considered to have a significant potential for causing allergic contact dermatitis (ACD) in humans. Because the prognosis for ACD is poor, sensitizing substances must be labeled with a description of the potential hazard and the precautions necessary for workers and consumers to avoid development of ACD. A recent ICCVAM evaluation found that the LLNA correctly classified 52% (14/27) of the strong human sensitizers when an effective threshold concentration (EC) ≤ 2% was used as the criterion. Thus, ICCVAM recommends that the LLNA may be used as a screening test to classify substances as strong sensitizers but that the classification of substances as other than strong sensitizers requires additional information. The OECD recently adopted two test guidelines for nonradiolabeled versions of the LLNA that could be used to classify substances as sensitizers: the LLNA: BrdU-ELISA and the LLNA: DA. Although these LLNA methods use different decision criteria to classify substances for ACD hazard, their accuracy is comparable to that of the LLNA. Of the 136 substances used in the ICCVAM evaluation of the usefulness of the LLNA for potency categorization, LLNA: BrdU-ELISA data were available for 31 substances, and LLNA: DA data were available for 30 substances. An EC ≤ 9% for the LLNA: BrdU-ELISA and an EC ≤ 2% for the LLNA: DA classified strong human sensitizers at rates comparable to that of the LLNA. These results suggest that the LLNA: BrdU-ELISA and the LLNA: DA may also be useful for classifying substances as strong human sensitizers.